rotates rapidly, the direction of rotation depending upon that of the field, but not of the discharge. This, Thomson explains by electrified molecules passing inward from the walls of the tube and set in rotation by the growing field.

IN the London *Electrician* of July 7th P. A. C. Swinton describes experiments upon the incandescence of Thoria and Ceria as heated by bombardment in a vacuum tube. He states that in the Bunsen flame Thorium oxid and Cerium oxid give about the same degree of incandescence, and that the addition of one per cent. of the latter to the Thorium oxid, as in the Wellsbach mantle, increases the incandescence about eleven times. In the vacuum tube, however, the ceria was but a dull red, when the thoria was at full incandescence, and the same was true of a mixture of half and half; further the addition of the one per cent. of ceria to the thoria increased the incandescence only about five per cent. This seems to favor the theory that chemical action takes place in the action of the Wellsbach mantle. The energy used was about one watt per candle.

F. C. C.

NOTES ON INORGANIC CHEMISTRY.

ATTENTION was recently called to the researches of Armand Gautier on the occurrence of iodin in ocean water. A continuation of his work takes up the iodin in the water of the Mediterranean Sea. The surface water, like that of the Atlantic Ocean, contains no iodids or iodates, but the iodin is present either in microscopic organisms or in complex organic compounds containing also nitrogen and phosphorus and capable of dialysis. The total amount of iodin present is the same for all depths, but varies in its form. Thus at the bottom of the sea iodids and iodates are present to the extent of 0.305 milligrams per liter, while they are zero at the surface. Of iodin in living organisms there is a maximum at the surface and none at the bottom. The soluble organic iodin is more constant, though varying to some extent with a maximum at 880 meters depth. The total iodin present is 2.25 mg. per liter, which is but little less than the 2.40 mg. found in the water of the Atlantic Ocean.

THE same number of the *Comptes Rendus* contains an account of the preliminary work by F. Garrigon on the occurrence of rare metals in water. He finds evidence of the presence of a number of unexpected metals, particularly those of the copper and tin groups. As titanium has been found not only as a constant constituent of almost all soils by Dunnington ; but of many, if not all, plants by Wait; and of animals including man — unpublished work of Wait (Univ. of Tenn.), Toole (Wash. & Lee.), and Baskerville (Univ. of N. C.)—it is not unnatural that traces of it should be found in mineral waters.

ONE of the greatest drawbacks to work on the element fluorin has been that the apparatus used must be of platinum or fluor spar. Moissan has, however, now shown that copper vessels can be used even for the electrolysis of hydrofluoric acid, being less attacked than other metals. The cause of this appears to be that there is formed on the surface of the copper a very thin layer of the fluorid of copper, which is wholly insoluble in hydrofluoric acid, and, of course, unattacked by free fluorin.

THREE papers have recently been read before the Chemical Society of London by Harold B. Dixon, which are of considerable interest. The first is on the combustion of carbon bisulfid. He finds it burns in the air with phosphorescence, which, however, begins to appear at 230°, while real ignition does not begin till 232° is reached. Carbon bisulfid is not decomposed by leading through a tube at 400°. It can be detonated by a heavy blow, but the explosion is not propagated through the vapor. The rapidity of explosion is greatest when exactly sufficient oxygen for combustion is present.

A SECOND paper is on the combustion of coal. It is ordinarily accepted that carbon burns directly to carbon dioxid and that this is subsequently reduced by the excess of carbon to carbon monoxid. Professor Dixon finds that when a mixture of air and carbon monoxid is passed slowly over coal at 500° the amount of carbon monoxid is unchanged, but the oxygen disappears completely by union with carbon to form carbon dioxid. On the other hand, if a mixture of 20% carbon monoxid and 80% oxygen is used, and the current is very slow, the

amount of carbon monoxid in the end product is increased. This is interpreted to mean that the primary combustion product at 500° is not exclusively at least carbon dioxid. Dixon is of the opinion that both carbon monoxid and carbon dioxid are formed at 500° and that in each instance there is sufficient heat of formation to occasion a secondary reaction, in the one case with oxygen, in the other with carbon.

THE third paper is on the action of nitrogen monoxid on nitrogen dioxid, in which the conclusion is drawn from experiments that, contrary to the views of Lunge and others that N_2O_3 cannot exist in the gaseous state, NO and NO_2 do unite to a limited degree to an unstable compound, which is the more dissociated the higher the temperature. The reaction $N_2O_3 \gtrless NO + NO_2$ is reversible and the properties of the mixed gases thus accounted for.

IN the same number of the *Proceedings of the Chemical Society* Szarvasy and Messinger describe a new compound of arsenic and tellurium. Proceeding from the fact that the difference in molecular weight of the arsenic compounds of the sixth group, As_2O_3, As_2S_2, As_2Se, is 15–16 units, they calculated that the tellurium compound should have the formula As_8Te_3, and accordingly fused together the components in this proportion under pressure and determined the properties and vapor density of the resulting compound.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

PRESIDENT SCHURMAN, of the Philippine Commission, has returned to the United States.

DR. A. B. MEYER, Director of the Dresden Museums, is now in the United States on a commission from the Saxon government to inspect American museums before the new buildings are erected at Dresden. He is accompanied by Professor P. Wallot, who is one of the international commission of architects selected to decide on the plans of the University of California in accordance with Mrs. Hearst's arrangements.

THE Duke of Bedford has been elected President of the Zoological Society of London, in the room of the late Sir William Flower.

THE Baly gold medal of the Royal College of Physicians, London, awarded for distinguished services to physiology, has been conferred upon Dr. C. S. Sherrington, F.R.S., professor of physiology in University College, Liverpool.

MR. G. A. STONIER, formerly Geographical Surveyer for New South Wales, has been appointed specialist in mining under the Geological Survey of India.

MR. EUSTACE GURNEY, of New College, has been appointed by Oxford University to the University Table at the Naples Biological Station.

AN aid in cryptogamic botany in the Smithsonian Institution, at a salary of $75 a month, will be appointed as a result of a civil service examination to be held on November 5th and 6th.

DR. J. WEINGARTEN, professor of mathematical physics in the Technical School of Berlin, has been elected a foreign member of the Accademia dei Lincei at Rome.

COLONEL HEINRICH HARTL, professor of geography in the University of Vienna, has been made an honorary doctor by the University.

PROFESSOR GUIDO CORA, of Rome, has been elected a member of the Italian Council of Geodesy.

W. D. HUNTER, Assistant Entomologist of the Experiment Station of the University of Nebraska, has been given a month's leave of absence in order to act as Special Agent for the Division of Entomology of the United States Department of Agriculture. He is to investigate the locusts of Minnesota and North Dakota.

AVEN NELSON, Botanist of the Wyoming Station, left Laramie early in June on an extended botanical survey of the Yellowstone National Park and the adjacent forestry reserves. In addition to large collections of the entire flora a careful study of the forage plants and range conditions is contemplated.

WE learn from the *Botanical Gazette* that the botanical plans of the University of Iowa for the summer are as follows: Professor B. Shimek will be engaged in special studies of the forestry problems in Iowa, under the direction of the